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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

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ART UNIT

PAPER NUMBER

1655

DATE MAILED:

06/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/461,308

Applicant(s)

AKIMOTO, TAIZO

Examiner

Frank W Lu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☒ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

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DETAILED ACTION

Response to Amendment

1. Applicant's response to the office action filed on April 5, 2001 has been entered as Paper No: 11. The claims pending in this application are claims 25-36. Rejection and or objection not reiterated from the previous office action are hereby withdrawn. The following rejections are based on amendment.

Claim Objections

2. Claims 28, 31, 32, 35, and 36 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Note that claim 28 does not further limit claim 26, claims 31 and 35 do not further limit claim 27, and claims 32 and 36 do not further limit claim 28.

Claim Rejections - 35 U.S.C. § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 25-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Note that claims 26-36 are dependent on claim 25.

Claim 25 is rejected as vague and indefinite over the phrase "for measuring a value detected from a second label based on a value detected from a first label" because it is unclear what it intended. For example, does the phrase mean "a value detected from a first label" serves as a control of "a value detected from a second label" or mean something else?

5. Claim 27 recites the limitation "cDNA polynucleotides" in the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 U.S.C. § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 25 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Larin *et al.*, (Nucleic Acids Res. 22, 3689-3692, 1994).

Larin *et al.*, teach a simple and quick method of analyzing multiple probes by FISH to metaphase chromosomes on a standard glass microscope slide (Figure 1, page 3690), or to a glass plate compatible with the dimensions of a 96-well microliter dish (Figure 2, page 3690). In one experiment nine different probes and one control were independently hybridized to human

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metaphase chromosomes on a single microscope slide. In a separate experiment, different centromere probes in a 96 -well microliter dish array were successfully hybridized to metaphase chromosome on a glass plate (page 3689, right column, the fourth paragraph). Six different centromere probes from chromosomes 2, 6, 8,10, 16 and X was used for study (page 3691, right column, the second paragraph). The hybridizations were detected using biotinylated DNA probe and fluorescence labeled avidin-conjugated antibodies (the second labeled signal). Chromosomes were counterstained with propidium iodide (the first labeled signal) and single optical sections were collected on a BioRAD MRC 600 using a Nikon 60×1.4 N.A.oil immersion lens, which serves as an analyzing means (page 3690, right column, third and fourth paragraphs).

Therefore, Larin *et al.*, teach the limitations recited by claims 25 and 29.

Claim Rejections - 35 U.S.C. § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 25 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold *et al.*, (Mol. Endocrinol. 9, 24-33, 1995) in view of Brown *et al.*, (US Patent No. 5,849,290, filed on June 7, 1995).

Arnold *et al.*, teach the detection of P³² labeled human estrogen receptor (hER) by western blot. Note that the phosphotyrosine-containing proteins were probed with a horseradish

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peroxidase-conjugated antiphosphotyrosine antibody. The bands were visualized by chemiluminescence using ECL system (the second labeled signal) (see Figure 4 in page 28, Figure 7 in page 30, and right column in page 31). The correction for the detected level of P^{32} labeled hER and p60^{c-src} (the first labeling signal with known different specific binding substances) could be considered to neglect (control background is zero) since P^{32} labeled hER could not visualized by chemiluminescence using ECL system.

Arnold *et al.*, do not disclose an apparatus that could scan a x-ray film.

Brown *et al.*, do teach an apparatus (Helena Labs Quick Scan densitometer) that could scan a x-ray film (see column 23, second paragraph).

Therefore, in the absence of an unexpected result, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have constructed an apparatus with the detection means and an analyzing means wherein x-ray films generated from the first and second labeled signals could be quantitated by a densitometer as suggested by Arnold *et al.*, and Brown *et al.*. One having ordinary skill in the art would have motivated to modify and combine the components in these methods together because it has been well known that one of common ways to quantitate the results from x-ray films was to scan these films using a densitometer. One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to scan these x-ray films using a densitometer because all of these prior arts are known and are easy to use.

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10. Claims 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown *et al.*, (US Patent 5, 807, 522, filed on June 7, 1995) in view of Cardullo *et al.*, (Proc. Natl. Acad. Sci. USA, 85, 8790-9794, 1988).

Brown *et al.*, teach fabricating microarrays coated with a layer of poly-L-lysine (Sigma) with immobilized biological samples. As described in example 2, the cDNA clones were spotted on poly-L-lysine coated microscope slides. Total poly-A mRNA from wild type Arabidopsis was isolated using standard methods (Maniatis, *et al.*, 1989) and reverse transcribed into total cDNA, using a fluorescein nucleotide analog to label the cDNA product (green fluorescence). Two micrograms of the cDNA products from each type of plant were pooled together and hybridized to the cDNA clone array in a 10 microliter hybridization reaction (fifth and sixth paragraphs of column 17).

Brown *et al.*, do not disclose to detect nucleic acid hybridization by fluorescence resonance energy transfer.

Cardullo *et al.*, do teach the detection of nucleic acid hybridization by fluorescence resonance energy transfer using a Perkin-Elmer spectrofluorimeter (see abstract in page 8790 and pages 8790 and 8791).

Both Brown *et al.*, and Cardullo *et al.*, do not teach to immobilize fluorescence labeled cDNA on a solid support.

However, in the absence of an unexpected result, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have constructed an apparatus with the detection means and an analyzing means wherein a fluorescence-labeled

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nucleic acid probe hybridized an array with another fluorescence-labeled cDNAs using a fluorescence resonance energy transfer method as suggested by Brown *et al.*, and Cardullo *et al.*. One having ordinary skill in the art would have motivated to modify and combine the components in these methods together because the simple substitution of one kind of reagent (unlabeled cDNAs) with known prosperities from another kind of reagent (fluorescence labeled cDNAs) with well know prosperities, and the simple replacement of one well know detection method (using single fluorescence labeled nucleic acid probe) from another well know detection method (fluorescence resonance energy transfer) in a hybridization assay would have been, in the absence of an unexpected result, *prima facie* obvious to one having ordinary skill in the art at the time the invention was made.

Furthermore, the motivation to make the substitution cited above arises from the expectation that the prior art elements will perform their expected functions to achieve their expected results when combined for their common known purpose. Support for making the obviousness rejection comes from the M.P.E.P. at 2144.07 and 2144.09.

Also note that there is no invention involved in combining old elements in such a manner that these elements perform in combination the same function as set forth in the prior art without giving unobvious or unexpected results. *In re Rose* 220 F.2d. 459, 105 USPQ 237 (CCPA 1955).

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Response to Arguments

11. Applicant's arguments with respect to claims 1-12 and 25-36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Claims 34-36 are objected to as being dependent upon a rejected base claim, but would be allowable if applicant could overcome the rejection under 35 U.S.C. 112, second paragraph and objection.

14. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal

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Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is either (703) 308-4242 or (703)305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (703) 305-1270. The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (703) 308-1152.

Any inquiry of a general nature or relating to the status of this application should be directed to the Chemical Matrix receptionist whose telephone number is (703) 308-0196.

Frank Lu
June 11, 2001


Ethan Whisenant, Ph.D.
Primary Examiner (FSA)